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Objectivity of learning performance evaluation evaluated by school age pupils as an assumption of achievement motivation and school success

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Abstract

In the submission are presented research findings of relationship between perceived adequacy of school age pupil's evaluation to their learning motivation and school success. The research was conducted on 140 pupils of 5th – 9th grade of primary school through success in Mathematics, items from Kozéki's questionnaire (1980) and propositions of Q-sorting (Stephenson, 1935) of perceived evaluation objectivity. It is possible to state that school success is the assumption of achievement motivation; however the learning performance is not related to perceiving evaluation objectivity presented by school success.

Keywords: achievement motivation, learning performance, school success, evaluation objectivity

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1. Achievement motivation and school success

The motivation to performance is common for all activities, as it represents a general desire for success. Performance motivation is relatively stable characteristics of an individual and various people are distinctive by various strength of motivation to performance (related to the desire for success) which decides about their engaged activity. Performance motivation has situation and disposition components which determine the selection of targets, stamina and the amount of effort involved (Nákonečný, 1992). Typical representatives of performance motivation theory can be considered the theories of McClelland (1961), Ryan a Deci (2008), Keller (2010).

McClelland (1961) assumed that human motivation consists of three dominant needs: the need for performance, need for power and need for affiliation. McClelland characterized people motivated to performance as being able to set high and unattainable aims, oriented towards personal performance and not towards recognition, desiring feedback based on evaluation of performance.

Self-determination theory is considered to be the macro-theory of human motivation (Ryan & Deci, 2008). Its authors create it in a close relationship with personality development, self-regulation, life targets and aspirations, vitality, unconscious processes, personal well-being but also with universal psychological needs. Ryan and Deci (2008) consider the universal psychological needs, participating on efficient operation and psychological health of a person, to be a triad of needs, where belongs the need for competence, need for autonomy and need for relations. This means that except freedom and social interactions, the authors perceive the need for production of performance to be a crucial need.

Keller (2010) defines his ARCS motivation model through four dimensions: attention (A), relevance (R), confidence (C) and satisfaction (S). All variables are always saturated by three sub-dimensions. Attention is saturated by perception arousal, information arousal, and variability. Relevance is saturated by orientation to targets, choice of motives, confidence. Confidence is saturated by requirements on learning, opportunities of success, personal control. Satisfaction is saturated by inner strengthening, outer rewards, and justice. From the point of motivation to performance is important process side consisting of concentration on performance, understanding the importance of the task, personal well-being and personal gain from production of performance

Learning motivation can be understood as a specific part of performance motivation. A key representative of this perspective is Kózeki (1980) whose ideas are presented in chapter 3.

Within performance motivation we meet with success as a reflection of the result of performed activity, also connected with the experience of success. Similar situation happens by failure and related experience. These repeated experiences with success and failure go back to childhood where they are mostly connected with the experience from school environment.

School success can be defined in two ways:

In a more general understanding, it is the degree of utilization of individual pupil's potential – degree of using individual abilities, competences, his relationship to school or subject, learning motivation (Čáp, 1993; Helus, 1982;), while it reflect also its conditional factors (Čáp & Mareš, 2001) and to the most basic can be included the school environment and effect of the teacher and perception of this effect by pupil. In the level of school practice is the concept of school success related to the criteria of school success defined for the student by the teacher. Except explicit and implicit classification of school success criteria is the key factor the teacher's subjective perception of pupil's activities and their fulfilment. Teacher's subjective perception and the verification result of pupil's fulfilment of tasks reflect back in school success and identically in pupil's perception and understanding about this process. The perceived teacher's objectiveness is always interpreted subjectively by the pupil where the pupil doesn't have to take into consideration the objective indicators of education standards. Question remains whether such a representation influences the performance itself, success and motivation.

In a narrower understanding, it is defined especially through the level used in school practice and authors use the term school success equivalently with the term school result, performance (Helus, 1982). A differentiated

operationalization of this term is reflected also in the differentiation of tools for its measurement and is reflected in the grades, marks or their averages.

2. Method

The research sample consisted of 140 participants whose average age was 12.6. They were the pupils of 5th – 9th grade of elementary schools, concretely the pupils of the lower secondary education.

In the research, we operated with three variables: school success, perceived objectivity of the learning performance and learning motivation. As an indicator of the school success we chose the mark of the Math, because (according to Vágnerová & Klégrová, 2008) the learning outcomes† of the Math are the best predictors of the self-concept and also the school successfulness in the school age. This relation was confirmed in our earlier study (Malá & Čerešník, 2011). The goal was the differentiation of the pupils into two groups. The first group was the group of the successful pupils. Their mark from the Mathematics was 1 (means excellent) or 2 (means very good). The second group was the group the less successful pupils. Their mark from the Mathematics was 3 (means average) or 4 (means sufficient).

Perception of the teacher's objectivity in the process of the evaluation was measured by Q-methodology (Stephenson, 1935 in the modification of Sexton, Snyder, Wadsworth & al., 1998). It consisted of 20 items related to teacher's objectivity (according to relevant literature) in the orthogonal configuration which were assessed by pupils on the scale from strong agreement to strong disagreement. On the base of their choices, we made the order of the items. In the next step, we subtracted the item value chosen by the concrete pupil from the average value of the item in the whole group. We acquired the concrete positive or negative values which determine if the pupil perceived the evaluation of the teacher as objective or not. So we can divide the research sample into two groups. The first was the group which perceived the evaluation of the teachers as objective and the second group perceived it as not objective.

For the learning motivation diagnostics, we used Kozéki's questionnaire (1980). The selection of this research method was inspired by the research of Čerešník (2012a) which was focused on learning motivation differences measurements in the different cultural contexts and also on age specifics of the learning motivation. The questionnaire consists of three basic dimensions of learning motivation (affective, cognitive and effect) which he divides into sub-dimensions (we specify their description):

A affective dimension – represents emotional relationship to people from the closest vicinity,
a1 emotional relationship to parents, effort to keep good relations with them,
a2 emotional relationship to educator, effort to keep trust of own idol, authority,
a3 emotional relationship to classmates, effort to gain and keep good feeling of belonging to class,
C cognitive dimension – represents relationship to knowledge, possibility to develop own abilities,
c1 autonomy and independence, motives of individual reality recognition, trust in own powers,
c2 intellectual motivation, need for knowledge, competence, pleasure in cognitive process, influence of self-perfection motives,
c3 activity, interest as a main motive,
E effect dimension – represents relationship to expectations of the environment, motivation influence of adopted norms and their harmony with own behaviour,
e1 motives, resulting from self-evaluation, from the effort to keep self-esteem; motives coming from tension between real and expected performance based on self-evaluation,
e2 motivation influence of adaptation to group, team regulations, influence of personal responsibility for team results; norms and values of surroundings are becoming main motives for learning,

† Learning outcomes are explicitly defined expectations of the knowledge amount the students have to understand and apply after the process of the education. For more information see for example Verešová (2013), Verešová, Čerešník (2013).

e3 motivation influence of moral standards and value system in a given society, its evaluation opinion on learning; motives resulting from the effort to approach the norms of society, mutual ideal.

We hypothesized that:

Hypothesis 1: there the differences exist in the learning motivation of the children in the relation with their school success.

Hypothesis 2: there the differences exist in the learning motivation of the children in the relation with perceived objectivity of the learning performance.

3. Results

To test our hypothesis we used Statistical Program for Social Science 16.0. We used Mann-Whitney test and t-test for two independent samples to test differences between research groups. As a critical statistical value which indicates the statistical significance, we appointed the standard value of $p \leq 0.05$.

The results are presented in Tables 1, 2, 3. All significant differences are emphasized by Bold.

Table 1. Differences in the learning motivation of the children in the relation with their school success

CKQ	Mark	N	Min	Max	Me	AM	SD	t	p
a1	1.2	57	-2	3	1	1.18	1.21	2.704	**0.008**
	3.4	83	-2	3	1	0.59	1.29		
a2	1.2	57	-2	2	0	0.05	1.17	3.669	**<0.001**
	3.4	83	-3	2	-1	-0.71	1.24		
a3	1.2	57	-1	3	1	1.00	1.00	2.930	**0.004**
	3.4	83	-2	3	0	0.47	1.09		
c1	1.2	57	-1	2	0	0.51	0.98	2.527	**0.013**
	3.4	83	-2	3	0	0.04	1.15		
c2	1.2	57	-3	2	0	-0.33	1.43	4.745	**<0.001**
	3.4	83	-3	1	-1	-1.37	1.16		
c3	1.2	57	-3	3	2	1.53	1.35	3.038	**0.003**
	3.4	83	-3	3	1	0.76	1.54		
e1	1.2	57	-2	2	1	0.70	1.05	1.787	0.076
	3.4	83	-3	3	0	0.37	1.08		
e2	1.2	57	-2	2	0	0.25	0.99	0.826	0.410
	3.4	83	-2	2	0	0.11	0.95		
e3	1.2	57	-2	3	2	1.54	1.23	3.131	**0.002**
	3.4	83	-2	3	1	0.87	1.28		
A	1.2	57	-3	8	2	2.23	2.63	4.130	**<0.001**
	3.4	83	-5	7	0	0.35	2.66		
K	1.2	57	-7	7	2	1.68	2.85	4.749	**<0.001**
	3.4	83	-7	7	0	-0.58	2.72		
E	1.2	57	-4	6	3	2.53	2.36	2.868	**0.005**
	3.4	83	-5	6	1	1.37	2.32		

legend: CKQ = components of Kozéki's questionnaire; Mark = mark of the Math; N = count; Min = minimal measured value; Max = maximal measured value; Me = median; AM = average mean; SD = standard deviation; t = value of t-test; p = significance; abbreviations of the learning motivation components are defined in chapter 3

Table 2. Differences in the learning motivation of the children in the relation with perceived objectivity of the learning performance

CKQ	perceived objectivity	N	Min	Max	Me	AM	SD	t	p
a1	positive	64	-2	3	1	0.86	1.33	0.259	0.398
	not positive	76	-2	3	1	0.80	1.26		
a2	positive	64	-3	2	0	-0.39	1.20	0.080	0.468
	not positive	76	-3	2	0	-0.41	1.32		
a3	positive	64	-2	3	1	0.75	1.05	0.645	0.260
	not positive	76	-2	3	1	0.63	1.11		
c1	positive	64	-1	3	0	0.36	1.10	1.285	0.101
	not positive	76	-2	3	0	0.12	1.11		
c2	positive	64	-3	2	-1	-0.83	1.32	0.966	0.168
	not positive	76	-3	2	-1	-1.05	1.41		
c3	positive	64	-2	3	1	1.27	1.39	1.400	0.082
	not positive	76	-3	3	1	0.91	1.59		
e1	positive	64	-2	2	0	0.47	1.01	-0.386	0.350
	not positive	76	-3	3	1	0.54	1.14		
e2	positive	64	-2	2	0	0.19	0.99	0.261	0.398
	not positive	76	-1	2	0	0.14	0.95		
e3	positive	64	-1	3	1	1.23	1.38	0.766	0.223
	not positive	76	-2	3	1	1.07	1.23		
A	positive	64	-5	8	1.5	1.22	2.78	0.405	0.343
	not positive	76	-5	7	1	1.03	2.82		
K	positive	64	-5	7	1	0.78	2.65	1.608	0.055
	not positive	76	-7	7	0	-0.03	3.20		
E	positive	64	-5	6	2	1.92	2.44	0.357	0.361
	not positive	76	-4	6	2	1.78	2.38		

legend: CKQ = components of Kozéki's questionnaire; Mark = mark of the Math; N = count; Min = minimal measured value; Max = maximal measured value; Me = median; AM = average mean; SD = standard deviation; t = value of t-test; p = significance; abbreviations of the learning motivation components are defined in chapter 3

Table 3. Differences in the learning motivation of the children in the relation with their school success according to perceived objectivity of the teacher

	positive perception of the objectivity						not positive perception of the objectivity					
CKQ	Mark	N	AM	SD	U	p	Mark	N	AM	SD	U	p
a1	1.2	28	1.29	1.24	146.5	0.001	1.2	29	1.07	1.19	360.0	0.121
	3.4	36	0.53	1.32			3.4	47	0.64	1.28		
a2	1.2	28	-0.04	1.29	205.5	0.020	1.2	29	0.14	1.06	208.0	<0.001
	3.4	36	-0.67	1.07			3.4	47	-0.74	1.36		
a3	1.2	28	1.04	0.96	198.5	0.013	1.2	29	0.97	1.05	342.5	0.072
	3.4	36	0.53	1.08			3.4	47	0.43	1.10		
c1	1.2	28	0.61	0.96	218.0	0.034	1.2	29	0.41	1.02	372.5	0.163
	3.4	36	0.17	1.18			3.4	47	-0.06	1.13		
c2	1.2	28	-0.18	1.36	141.0	0.001	1.2	29	-0.48	1.50	251.0	0.002
	3.4	36	-1.33	1.04			3.4	47	-1.4	1.25		
c3	1.2	28	1.57	1.23	251.5	0.128	1.2	29	1.48	1.48	305.5	0.022
	3.4	36	1.03	1.48			3.4	47	0.55	1.57		
e1	1.2	28	0.68	0.95	232.5	0.062	1.2	29	0.72	1.16	385.5	0.219
	3.4	36	0.31	1.04			3.4	47	0.43	1.12		
e2	1.2	28	0.14	0.93	299.5	0.431	1.2	29	0.34	1.05	389.0	0.234
	3.4	36	0.22	1.05			3.4	47	0.02	0.87		
e3	1.2	28	1.82	1.22	128.0	<0.001	1.2	29	1.28	1.19	320.5	0.036
	3.4	36	0.78	1.33			3.4	47	0.94	1.24		
A	1.2	28	2.29	2.58	145.5	0.001	1.2	29	2.17	2.71	257.5	0.004
	3.4	36	0.39	2.68			3.4	47	0.32	2.67		
K	1.2	28	1.96	2.47	144.0	0.001	1.2	29	1.41	3.19	258.0	0.004
	3.4	36	-0.14	2.43			3.4	47	-0.91	2.90		
E	1.2	28	2.64	2.22	187.5	0.009	1.2	29	2.41	2.53	321.5	0.042
	3.4	36	1.36	2.49			3.4	47	1.38	2.21		

legend: CKQ = components of Kozéki's questionnaire; Mark = mark of the Math; N = count; AM = average mean; SD = standard deviation; U = value of Mann-Whitney test; p = significance; abbreviations of the learning motivation components are defined in chapter 3

When testing hypothesis 1, we discovered that (table 1.):
there exists a difference between learning motivation of successful and less successful children (measured by the mark from the Math) in all dimensions and sub-dimensions of Kozéki's questionnaire, except the sub-dimensions e1 (self-evaluation motive) and e2 (motive of group regulations, norms). T-value was fluctuating between 2.527 and 4.749 and significance value from 0.013 to < 0.001.

In two cases was the average value of measured motive negative in the group of less successful children. This was motive a2 (emotional relationship to authority, teacher) and cognitive dimension of learning motivation (C).
in one case we discovered in both groups of children a negative motive value. This was motive c2 (need for knowledge).

Regardless statistical significance, less successful children always scored lower than successful children.

When testing hypothesis 2, we haven't discovered any significant differences (table 2.) in learning motivation on relation to perceiving objectiveness of teacher's evaluation. We repeatedly discovered that motive c2 (need for knowledge) is negative.

Based on above stated findings we evaluated set hypotheses as follows. We can confirm Hypothesis 1 and we cannot confirm Hypothesis 2.

Despite the relative closeness of the findings we decided to examine the relation of school effectiveness (mark from Mathematics) by perception of teacher's evaluation and learning motivation (table 3.). We discovered that: children that perceive the teacher's evaluation as objective differ in all dimensions and sub-dimensions of Kozéki's questionnaire except motives c3 (interest in motive), e1 (self-evaluation motive) and e2 (motive of group regulations, norms) which is a very similar result to testing Hypothesis 1 (also in the sense of motive quality and size of discovered differences). We discovered no significant differences in the group of less successful children in five motives: a1 (relationship to parents), a3 (relationship to classmates), c1 (independence), e1 (self-evaluation motive), e2 (motive of group regulations, norms). We again discovered demotivating influence of need for knowledge (c2) in both age groups.

4. Discussion

When analysing the learning activities of pupils divided according to their school effectiveness represented by their Mathematics mark, we discovered the existence of identical motivation and demotivation factors. Based on the average values we identified the identical motivation factors, specifically the motive of following moral standards (e3), interest (c3) and relationship to parents (a1). They seem to be key factors because despite the children's Mathematics effectiveness they include all important levels influencing motivation, specifically the relationship to oneself, relationship to close people and relationship to society. The demotivating factors are identical in both groups: need for knowledge (c2) and relationship to teacher (a2). The difference between successful and less successful children represents the third identified factor. In case of successful children it is the following of regulations (e2) and in case of less successful children it is the trust in own powers (c1). More successful children are therefore more demotivated by realization of outer limitations and less successful children by the inability to perceive subjective control. Similar findings are presented by Čerešník (2012b) using a sample of university students.

The demotivating influence of need for knowledge (c2) in both tested groups can be considered specificity. We assume that this fact is caused by the expansion of external factors. A primary prototype factor influencing the thinking, feeling and behaviour is considered the family environment which is (in optimal conditions) the source of emotional support and psychical stimulation. It is presented by a unique bond which influences the attitude towards oneself, towards other people, towards one's surroundings and has influence on human motivation in the sense of selecting preferential activities. In ideal conditions, it stimulates curiosity which comes from the feeling of safety and fulfilment of basal social needs. In pessimistic conditions it is more upsetting; it leads to deprivation, or sub-deprivation. Therefore we believe that the quality of family environment is a factor which could strongly influence the exploration activity which in this period shows in the need to new understanding and knowledge.

The relationship to the teacher represented by the factor (a2), located among demotivating factors in both groups indirectly points to the relation between school effectiveness and relation to authority. This factor can't be perceived as positively motivating in either group. It has a neutral effect at successful children and it acts negatively at less successful children. The relationship to the teacher is independent from the teacher's objectiveness of evaluation in the sense of stimulation to learning performance.

We can state that school success is the assumption of achievement motivation; however the learning performance is not related to perceiving evaluation objectivity presented by school success.

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